



Crofters' Diversity Pays!

Adding value to crofters' landraces through research into artisan products.

Hebridean Rye (Secale cereale)

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The Crofters’ Diversity Pays! (CDP!) project researches potential income streams for crofters through the assessment of new uses for the traditional, landrace varieties of crops that they grow, many of which have been maintained over generations as a unique form of agricultural biodiversity.

Developing new uses and high-end products from low-value agricultural assets can provide new business opportunities for crofters and create new markets for their produce which, in turn, can help to maintain their unique their way of life.

What is a Crofter?

A crofter is a person who occupies and works a small agricultural landholding (known as a ‘croft’), mostly in the Highlands and Islands of Scotland. Crofters are often primary producers of food, feed and fuel products, employing low-input and sustainable agricultural practices and protecting the biodiversity and traditional knowledge that are associated with their cultivation.

Hebridean Rye – a Crofters' Landrace
As part of the CDP! project, research was undertaken into the potential to add value to Hebridean rye (*Secale cereale*), a cereal landrace that has been grown in the Highlands and Islands for centuries, and that is currently still grown on the Outer Hebridean islands of Uist as a part of ‘crofters corn’ – a mix of predominantly oats with barley and rye that is used as livestock feed.

Elsewhere, for example in mainland crofting communities, ‘crofters corn’ is no longer commonplace and the traditional knowledge and processes involved in its cultivation, and the skills to maintain a landrace through local seed production and storage, have been lost. Although rye is commonly cultivated in small scale in other countries, it is predominantly cropped in large scale in Scotland.

What is a Landrace?

A landrace is a locally adapted, traditional variety of a species of animal or plant that has developed over time through adaptation to its specific natural and cultural environment, often in isolation from other populations of the same species. This adaptation can give the landrace unique properties.

Why Rye?
Rye is enjoying something of a revival in Scotland. Artisan bakers, craft brewers and small distillers are rediscovering the unique qualities of rye in products such as bread, biscuits, beers and spirits.

The growing number of small and artisan bakers in Scotland are increasingly interested in utilising traditional and landrace varieties of cereal that may not suit large-scale processing, and which provide the opportunity for a more flexible and innovative approach

to the use of flour mixes and bakery products such as breads and biscuits.

In recent years, craft beer and artisan distilling have seen significant growth in Scotland. Small scale producers now satisfy an increasing demand for diversity within the alcohol market, and rural and island breweries and distilleries are actively seeking new ingredients for their beers and spirits that help them connect with their local environment, or that have an interesting story to tell.



Research Aims
The aim of the research was to investigate the potential to add value to Hebridean rye in order to inform crofters and producers of the potential uses of the cereal as a new and unique ingredient in a number of artisan products.

- Research questions included:
- How does the Hebridean rye compare with other varieties of rye?
 - What kind of processing is possible to transform Hebridean rye into food products?
 - How might Hebridean rye be utilised to create a local grain supply for food production?
 - Does Hebridean rye have special nutritional value, does it taste good, and will people eat it?
 - What end-use food products might be produced using Hebridean rye?
 - How might these Hebridean rye products be branded and marketed?

What is Agricultural Biodiversity?

Agricultural biodiversity is the variety and variability of plants, animals and micro-organisms at genetic, species and ecosystems levels that exist within agricultural production systems. These provide stability, adaptability and resilience in these systems and are often a key element of livelihoods in rural communities.

Growing Trial
The trial growing of Hebridean rye at a croft nursery site on the mainland found it to be suitable for growing in Lochaber. The Hebridean rye was found to have some useful growing attributes that could work well in developing an evolutionary cereal rye population for the area. This growing trial was an important strand of the overall project, exploring the pathway from seed to harvest, and providing practical insight from the perspective of the crofter that grew the crop.



Qualities Testing
The Hebridean rye was tested for its safety, to ensure acceptable levels of ergot and other pathogens, and to ascertain that it was of high quality and safe to eat. Artisan bakers were engaged to test the Hebridean rye for its milling properties, and the usefulness of the resulting flour for baking, while craft brewers were engaged to test the Hebridean rye for its brewing properties. The results from all of the tests were positive, confirming that Hebridean rye is a viable ingredient for small-scale flour production, artisan baking and the production of craft alcohol products.



Nutritional Testing
Existing research suggests that traditional or landrace varieties of crops can have higher nutritional value than modern cultivars. The nutritional analysis of the Hebridean rye flour confirmed that it contains high levels of many useful micro and macro nutrients and has the potential to be used to create healthy food products, as well as used being as an added ingredient to fortify other foods.

Hebridean rye was found to be high in fibre and protein, contain high levels of phosphorus, manganese and zinc, and have a diverse and specific mineral composition. It therefore has the potential to have a beneficial impact on the Scottish diet.

Sensory Testing
A number of prototype and test breads and beers were produced using the Hebridean rye by artisan bakers (Doughies and Grain of Truth) and craft brewers (Stewart Brewing and Pilot Beer). Initial results from a series of tasting panels show that these products have a distinctive and enjoyable flavour profile and that consumer acceptance levels were high, suggesting that people would buy and enjoy food and drink products produced using Hebridean rye.

Branding
The branding and packaging of a food or drink product can have a significant influence on whether a potential consumer chooses to buy it or not. Initial discussions suggest that there is significant potential for the marketing of products containing Hebridean rye, and that these would benefit from utilising the stories behind its nutritional qualities, scale of production, crofting and Gaelic history and heritage, and locality and provenance.

Results
To our knowledge, this is the first project to report the nutritional properties of Hebridean rye. The research undertaken has validated its potential as a potentially useful and nutritionally important ingredient.

Artisan bakers and craft brewers have created the first Hebridean rye breads and beers and have demonstrated that Hebridean rye flour is a viable ingredient with unique product qualities. Those testing the breads and beers confirmed that they have distinct tastes and welcome sensory attributes, and that there is considerable potential to develop similar products for the market.

The research has recognised a demand for traditional, landrace cereals, such as Hebridean rye, particularly from small-scale and artisan food and drink businesses, and has identified potential new value chains for crofters, growers, processors and producers alike.



Conclusions

This innovative and groundbreaking research project has provided information that can be utilised to provide new business opportunities for crofters and develop new markets for their produce.

Hebridean rye has the potential to play a valuable role in Scotland's food and drink industry, providing business opportunities for those living in remote and rural areas, allowing the diversification of supply chains, and potentially even impacting positively on dietary health.

An added benefit is the positive impact that this could have on the preservation of agricultural biodiversity and the traditional knowledge and practices that are associated with the cultivation of Hebridean rye.

The research has been vital to understanding the journey towards a number of marketable end products, which, if developed, could ensure that it is worthwhile for crofters to grow traditional, landrace varieties of crops such as Hebridean rye.

There is scope to build on the success of this initial research project, and to discover more about the unique characteristics and diverse qualities of Hebridean rye. However future sources of funding and resource will be required to make this a reality.



Project Partners

A collaborative and multidisciplinary approach underpins the CDP! project, which benefits from the involvement of crofters, processors, bakers and brewers, academics, scientists and others, each complementing the others by providing their own unique skills and expertise. This research into Hebridean rye benefited through input from the following individuals and organisations:

LEAD PARTNER

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LEAD – RYE WORKSTREAM

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